CLAIMS

What is claimed is:

1.   A communication system comprising a plurality of portable devices being communicatively linked via an ad-hoc wireless network such that each said portable device functions in a peer-to-peer fashion, wherein each said portable device includes a communication architecture comprising:

an application configured to control service discovery, usage, and advertising;

a service manager configured to discover services provided by other ones of said portable devices, and register and advertise services provided by said portable device within which said service manager is disposed, under control of said application; and

a micro-hypertext transfer protocol server configured to send and receive queries to facilitate service discovery, usage, and advertising.

2.   The system of claim 1, said service manager having a service registry specifying a hierarchy of services available from the portable computing device within which said service manager is disposed, and specifying services, within said hierarchy, that have been discovered by said portable device.

3.   The system of claim 2, wherein said portable device receives a service discovery message from a client device and a response from a server device, said portable device comparing the response from the server device with the service registry and responding to said service discovery message only if said service registry specifies different services than specified in the response from the server device.

4.   The system of claim 2, said application comprising a user interface, wherein said hierarchy of services specified by said service registry correlates directly with said user interface.

5.   The system of claim 1, wherein said service manager interacts with a messaging layer of said portable device, said messaging layer being in communication with a transport layer of said portable device.

6.   The system of claim 1, wherein each service specified within said service registry has an expiration attribute, said service manager configured to purge said service registry of services that have expired.

7.   The system of claim 1, wherein at least one of said plurality of portable devices is configured to transmit a service discovery message to a fixed multicast group.

8.   The system of claim 7, wherein, upon receiving the service discovery message, at least one other of said plurality of portable devices locates a service matching said service discovery message and transmits a service advertisement message specifying one or more services matching said service discovery message.

9.   The system of claim 1, wherein at least one of said portable devices includes a service, said service comprising:
        a service object configured to perform said service and interact with said application disposed within another one of said plurality of portable devices having requested said service; and
        a service description including information pertaining to properties of said service.

10.   The system of claim 1, wherein said portable device waits a random time period prior to sending a response to a received service discovery request.

11.   A method of providing services over an ad-hoc, peer-to-peer, wireless network comprising:

within a portable device, transmitting a service discovery message to a fixed multicast group over said network;

receiving a service advertising message from at least one other portable device of said fixed multicast group;

matching a service specified by the service advertising message with a location within a service registry of the portable device; and

incorporating the matched service within the service registry, wherein the matched service specifies a network address for retrieving information about the matched service.

12. The method of claim 11, further comprising:

transmitting a query to the network address of the matched service requesting additional information about the matched service;

receiving the additional information; and

invoking the matched service.

13. A method of providing services over an ad-hoc, peer-to-peer, wireless network comprising:

within a first server device, receiving a service discovery message over the network from a client device, wherein the service discovery message requests a service;

generating a response to the service discovery message, wherein the response specifies differences between the requested service and a service registry of the first server device;

receiving a response to the service discovery message from a second server device;

comparing the response from the second server device with the response of the first server device; and

selectively sending the response of the first server device according to the comparing step.

14. The method of claim 13, wherein the response of the first server device is sent if the response of the second server device differs from the response of the first server device.

15. The method of claim 13, wherein the response of the first server device is not sent if the response of the second server device is the same as the response of the first server device.

16. A machine readable storage, having stored thereon a computer program having a plurality of code sections executable by a portable computing device for causing the device to perform the steps of:

transmitting a service discovery message to a fixed multicast group of portable computing devices over an ad-hoc, peer-to-peer, wireless network;

receiving a service advertising message from at least one portable computing device of the fixed multicast group;

matching a service specified by the service advertising message with a location within a service registry of the portable device; and

incorporating the matched service within the service registry, wherein the matched service specifies a network address for retrieving information about the matched service.

17. The machine readable storage of claim 16, further comprising:

transmitting a query to the network address of the matched service requesting additional information about the matched service;

receiving the additional information; and

invoking the matched service.

18.   A machine readable storage, having stored thereon a computer program having a plurality of code sections executable by a portable computing device for causing the device to perform the steps of:

within a first server device, receiving a service discovery message over an ad-hoc, peer-to-peer, wireless network from a client device, wherein the service discovery message requests a service;

generating a response to the service discovery message, wherein the response specifies differences between the requested service and a service registry of the first server device;

receiving a response to the service discovery message from a second server device;

comparing the response from the second server device with the response of the first server device; and

selectively sending the response of the first server device according to the comparing step.

19.   The machine readable storage of claim 18, wherein the response of the first server device is sent if the response of the second server device differs from the response of the first server device.

20.   The machine readable storage of claim 18, wherein the response of the first server device is not sent if the response of the second server device is the same as the response of the first server device.